



Review Article

A REVIEW ON *DNYANENDRIYA (SENSE ORGANS) W.S.R. GHRANENDRIYA KRIYA SHARIR*

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ABSTRACT

According to Ayurveda classic texts *Indriyas* (Sense organ) are the apparatus to attain knowledge for *Atma*. These are the tools for obtaining knowledge. *Acharya Charaka* described *Indriya* as basic instrument in differentiating the living and non-living matters. Whereas in contemporary science *Indriyas* are dealt only with structure i.e., sense organ where the actual transduction process takes place. *Indriyas* are composed of five elements still specific *Mahabhuta* dominates precise *Indriya*. This is the reason behind reception of specific sensation by its respective *Indriya*. E.g. *Prithvi Mahabhuta* dominates *Ghranendriya* and receive knowledge of *Gandha*. Considering the above said, present paper focuses upon understanding of *Dnyanendriya* w.s.r. *Ghranendriya*. *Adhithana* of *Ghranendriya* is *Nasa* (Nose) inside *Sharir* which is embedded with dominance of *Prithivi Mahabhuta* and is responsible for acquisition of special attribute- *Gandha* (smell). Regarding examination of *Indriya* the *Dnyanendriya* is examined for its functional status as the status of perfection in perception of knowledge of respective object. According to contemporary science there are about 10 to 20 million of olfactory receptor cells present in human body. The olfactory receptor is a bipolar neuron which is supported by sustentacular cells. Olfactory receptors are situated in olfactory mucus membrane. This mucus membrane contains Bowman glands. Our study reveals that concept of *Acharyas* in relation to *Dnyanendriya* as important tool to gain specific knowledge seems true even in present era. It can be opined that Ayurveda concept related to *Indriya* needs to be explored through research to provide evidence based information related to *Indriya Sharir*.

KEYWORDS: *Dnyanendriya*, Sense organs, *Ghranendriya*, Nose, Olfactory Pathway.

INTRODUCTION

According to Ayurveda *Indriyas* (sense organ) are the apparatus to attain knowledge for *Atma*. These are the tools for obtaining knowledge. In other words we can say that knowledge (sensory or motor) which is perceived, analyzed, given or received by *Atma* and the tool which is helpful in reception of the same is termed as *Indriya*.^[1] Further more control over the *Indriya* is the principle to be followed and practiced for achieving spiritual health.^[1]

According to *Shabdakalpadruma* *Indriya* is defined as *Atma* or *Ishwar* (Creator). The cognition and other activities are performed by the *Indriyas* only where *Atma* is considered as *Indra*. Thus the revelation of cognition and activities are due to *Dnyanendriyas* and *Karmendriyas* respectively; hence termed as *Indriya*.^[2]

Acharya Charaka described *Indriya* as basic instrument in differentiating the living and non-living

matters.^[3] Whereas in contemporary science *Indriyas* are dealt only with structure i.e. sense organ where the actual transduction process takes place. According to Ayurveda there are total eleven type of *Indriyas* are present in *Sharir* i.e. *Dnyanendriya* (i.e. *Chakshu*, *Srotra* etc.), *Karmendriya* (*Vaak*, *Upastha* etc.) and *Ubhayendriya* (*Mana*).^[4]

Ancient Indian scholars had diverse opinion on the derivation of *Indriya*. Ayurveda considered *Indriya* as *Panchabhautika*^[5] and on other hand *Acharya Sanmkhya* (philosopher and sage) opined that *Indriyas* are formed by *Trividha Ahamkara* i.e. *Satvik*, *Rajasik* and *Tamasik Ahamkara*.^[6] Although *Indriyas* are composed of five elements still specific *Mahabhuta* dominates precise *Indriya*. This is the reason behind reception of specific sensation by respective *Indriya*, e.g. *Prithvi Mahabhuta* dominates *Ghranendriya* and receive knowledge of *Gandha*.

Considering the above said, present paper focuses upon understanding of *Dyanendriya* w.s.r. *Grhhane-ndriya*.

MATERIALS AND METHODS

It is a literary review to explore the understanding of *Dnyanendriya* w.s.r. *Ghranendriya* with help of data collected from classical and contemporary Ayurvedic texts and published research articles.

DISCUSSION

It is essential for *Atma* to acquire knowledge from the outward objects there must be a well coordination between *Indriya*, *Indriya-Artha* and *Mana*. *Atma* cannot perceive knowledge without the help of *Indriya*.

Acharya Panini has defined opines that *Indriya* is the one which is created by *Indra*, lives with *Indra*, express the character of *Indra*, always sees through *Indra* and in which all activities are always carried out by *Indra*.^[7]

According to *Acharya Charaka*, *Indriyas* are the basic component in differentiating the living and non-living being.^[8] *Acharya Sushruta* quoted that *Indriya* are the specific factors or organs situated in body and act as means for acquiring knowledge of various objects and performing various activities of the body.^[9]

Indriya Pancha-Panchaka

The *Dnyanendriya* present inside *Sharir* conjoins with the *Mana* (mind) which is synchronous with *Atma* and then after knowledge is perceived. Lastly the *Buddhi* (intellect) aspect of the respective *Indriya* knowledge is gained. All this learning and intellectual process needs an instrument to gain the stable knowledge of the same which is *Indriya*. For this instance, *Acharya Charaka* has mentioned the intellectual aspect depending on the five *Dnyanendriya* present inside *Sharir* which is also of five different types. This is termed as *Indriya Panchapanchaka*. It includes *Indriya*, *Indriya Dravya*, *Indriya Adhithana*, *Indriya Artha* and *Indriya Buddhi*.^[10]

Table 1: Indriya Pancha -Panchaka

Sl. No.	Indriya	Indriya Dravya	Indriya Adhithana	Indriya Artha	Indriya Buddhi
1.	Shrotra (Hearing)	Kha (Akasha)	Karna (Ears)	Shabda (Sound)	Shabda Buddhi (Auditory centers in brain)
2.	Sparshana (Tactile)	Vaayu	Twak (Skin)	Sparsha (Touch)	Sparsha Buddhi (Centre for tactile sense)
3.	Chakshu (Vision)	Jyoti (Teja)	Netra (Eyes)	Roopa (Shape)	Roopa Buddhi (Visual centers in brain)
4.	Rasna (Taste)	Apa (Jala)	Jihva (Tongue)	Rasa (Rasa)	Rasa Buddhi (Centre for gustatory sense)
5.	Ghrana (Smell)	Bhu (Pruthvi)	Nasika (Nose)	Gandha (Smell)	Gandha Buddhi (Olfactory centre in brain)

Acharya Charaka describes five *Dnyanendriya* as follows.^[11]

1. **Shrotrendriya:** Responsible for perception of sound
2. **Ghranendriya:** Responsible for perception of smell
3. **Rasanendriya:** Responsible for perception of Taste
4. **Sparshanendriya:** Responsible for perception of touch
5. **Chakshurendriya:** Responsible for perception of Vision

Knowledge and learning process through

Dnyanendriya: There are many various theories present regarding perception of knowledge according to Ayurveda. In short it can be opined that the triad of *Indriya* - *Mana*- *Atma* are solely responsible for perceiving distinct and indistinct type of knowledge.^[12-13]

Ghranendriya (Sense organ for perception of smell)

Adhithana of *Ghranendriya* is *Nasa* (Nose) inside *Sharir* which is embedded with dominance of *Prithivi Mahabhuta* and is responsible for acquisition of its special attribute- *Gandha* (smell). The *Gandha* is again broadly classifies into two types- *Sugandha* (Pleasant) and *Durgandha* (Unpleasant). The *Gandhavahi Dhamanis* related to *Ghranendriya* are responsible to complete their respective work viz. transmission and interpretation of sense of smell; and this is accompanied by *Pranavaayu*. Further the learning process carries on where the *Gandhavahi Dhamani* Connects *Mana* which is synchronous with *Atma*. This is last state where perception of knowledge of sense of smell is felt by *Buddhi*. It is necessary for normal sense of smell, the respective *Indriya (Ghranendriya)* and its components must be normal.^[14]

Ghranendriya Kriya Sharir

1. **Dosha-** Prana Vayu¹⁵, Udana Vayu¹⁶, Sadhaka Pitta¹⁷
2. **Dhatu-** Asthi- 3 Tarunasthi (Cartilage)¹⁸
3. **Upadhatu-** Sira – 24 (Vata-6, Pitta- 6, Kapha-6, Rakta-6)
Dhamani- 2 Gandhavahi Dhamani¹⁹
4. **Mala-** Khamala (Secretion from external orifices)²⁰
5. **Pramana-** Tribhagangula (1/3 angul)
6. **Adhithana-** Nasa (Nose)²¹
7. **Constitutional element-** Prithvi Mahabhuta²²
8. **Object-** Gandha (smell)²³
9. **Gandha Buddhi-** 2 Sugandha (Pleasant), Durgandha (unpleasant)²⁴

Indriya Arishta related to Ghranendriya (Fatal signs of olfactory perception): Indriyanikamindriya adhyay of Charaka Samhita has mentioned a lot about abnormal and fatal signs of Indriya where the body is achieving imminent death. Fatal signs of Ghranendriya are as follows.

Acharya Charaka opines that if the person fails to recognize the smell of different objects, whether good or bad or not responsive to any smell at all is suggestive of having fatal signs related with olfactory sensation.²⁵

Ghranendriya Pariksha – Regarding examination of Indriya the Dnyanendriya is examined for its functional status as the status of perfection in perception of knowledge of respective object. While doing Indriya Pariksha one thing should be noted that in terms of modern science these Indriyas reflecting through their respective Adhithana are very well supplied and associated by cranial nerves. So examination of Indriya is considered along with the

functioning status of cranial nerves. Following is the description about the Indriya Pariksha which is then followed by examination of cranial nerves as well. Following examination procedure can be followed for examination of Ghranendriya.

Procedure for Ghranendriya Pariksha

- Examiner has to close the eyes of the subject.
- Different substance having diverse odor are then brought near his/her nostril one by one and each time subject is asked to recognize the sense of smell.

Questionnaire for assessment of Ghranendriya²⁶

1. Is Ghranendriya affected Yes/No
2. If yes then which Right/Left/ Both
3. If yes, then is smell discrimination possible? - Yes/No
4. If no- ? Anosmia/Parosmia
5. Is there any structural abnormality-? Yes/No
6. If yes, then mention specifically-

Physiology of Sense of Smell- There are about 10 to 20 million of olfactory receptor cells present in human body. The olfactory receptor is a bipolar neuron which is supported by sustentacular cells. Olfactory receptors are situated in olfactory mucus membrane. This mucus membrane contains Bowman glands.

The Vomeronasal organ is an accessory olfactory organ which is named as Jacobson’s organ. This organ contains vomeronasal receptors which specially detect the group of chemical substance known as pheromones. Pheromones are present in urine, vaginal fluid, auxiliary secretion of mammals and have a impact on behavior and reproductive cycle of same species.²⁷

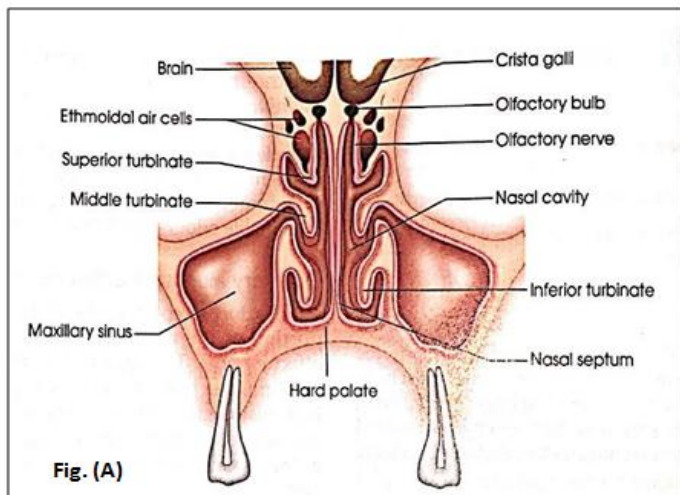


FIG. (A)-Anatomical position of the receptors for the sense of smell in the inferior of the nose in between the medial nasal septum and superior turbinate (crellmen).

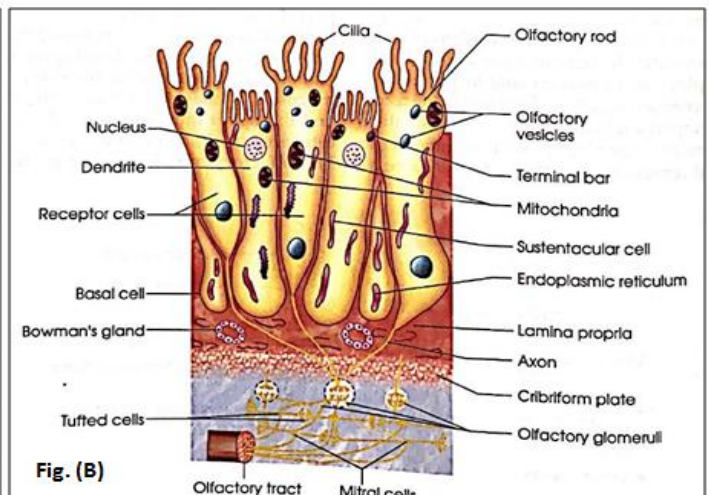
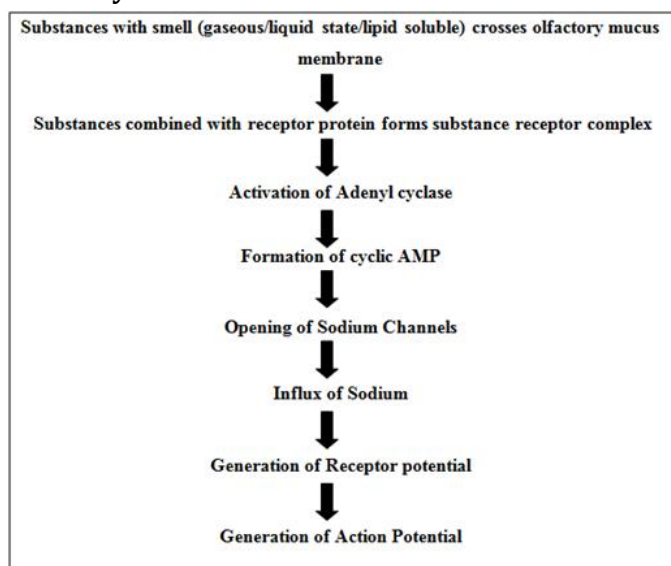


FIG. (B) –Histological representation of the olfactory epithelium and connections of olfactory nerve fibers. (Image source- Chatarjee CC, Human physiology)

Olfactory transduction



Olfactory Pathway²⁸

Axons of bipolar olfactory receptors pass through cribriform plate of ethmoidal bone ends in paired grey masses called as Olfactory bulbs. Axons synapse with dendrites of mitral cells. Axons of mitral cells leave olfactory bulbs and forms olfactory tract. This olfactory tract ends in cerebral cortex- Primary olfactory area (area no. 28).

Applied physiology:²⁹ Sense of smell causes following symptoms in abnormal state:-

- Anosmia:** It is the inability to recognize odor or total loss of sensation of smell.
- Hyposmia:** It is the reduced ability to detect the smell sensation
- Hyperosmia:** It is the increased response towards smell sensation.

CONCLUSION

Understanding concept of *Dnyanendriya* is an important step in learning of *Kriya Sharir*. It enables scholars of Ayurveda to learn normal physiology of *Indriya* (senses) to diagnose any illness related to it. Our study reveals that concept of Acharyas in relation to *Dnyanendriya* as important tool to gain specific knowledge seems true even in present era. Present study also focused to review regarding *Ghranendriya* which can also be correlated to sense of smell in contemporary science. Various aspect of *Ghranendriya* is explored related to it such as *Indriya Arishta*, *Indriya Pariksha* etc. It can be opined that *Ayurveda* concept related to *Indriya* needs to be explored through research to provide evidence based information related to *Indriya Shaarir*.

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